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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/808,864	03/24/2004	William B. Wilson	Wilson 13	6650
46900	7590	05/25/2005	EXAMINER	
MENDELSON & ASSOCIATES, P.C. 1500 JOHN F. KENNEDY BLVD., SUITE 405 PHILADELPHIA, PA 19102			LE, DINH THANH	
			ART UNIT	PAPER NUMBER
			2816	

DATE MAILED: 05/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

**Office Action Summary**

Application No.

10/808,864

Applicant(s)

WILLIAM B. WILSON

Examiner

DINH T. LE

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/24/04</u> . | 6) <input type="checkbox"/> Other: ____.  |

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## **DETAILED ACTION**

### ***Specification***

The specification has been checked to the extent necessary to determine the presence of all possible minor errors. However, the applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

### ***Claims Objection***

Claims 16-17 are objected to because they are the duplicates of claims 14-15. Correction is required.

### ***Claim Rejections***

#### ***Claim Rejections - 35 USC § 112***

Claims 1-34 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Correction or clarification is required.

In claim 1, it is unclear where the "first reference voltage" on line 9 comes from, how the circuitry can drive a voltage and how the second current can be applied to the damping capacitor. The description of the present invention is incomplete because the sensing-and canceling circuit, the damping capacitor and the matching capacitor are not connected to anything. Thus, the claimed loop filter may not perform the recited function.

In claim 2, the recitation "the voltage" on line 5 is confusing because it is unclear if this is additional "voltage" or further recitation of the previously claimed "voltage" on line 8 of claim 1. The same is true for reciting "voltage" in claim 12.

In claim 3, it is unclear how the oscillator can "use" the first control signal.

In claim 4, it is unclear how the transistor on lines 5 and 7 can “apply” output signal to the capacitor since the transistor is not the applying means.

In claim 5, the recitation “the gate oxide thickness” lack clear antecedent basis. It is unclear how the capacitor can have the gate oxide thickness.

In claim 6, the recitation “wherein the gate oxide thickness of the damping capacitor is about 17 Angstroms or less” is misdescriptive because it is inconsistent with what is recited in claim 5. For example, claim 5 has already recited that the thickness is about 50 Angstroms. The same is true for claims 10, 23 and 34.

In claim 7, it is unclear how the circuitry can recognize the capacitance ratio in order to generate the second current.

In claim 8, the description of the present invention is incomplete because the transconductor capacitor is not connected to anything. Thus, the claimed transconductor capacitor may not perform the function.

In claim 11, it is unclear how the oscillator can “use” the second control signal to set the center frequency and how the frequency can be set because oscillator cannot set its frequency by itself. The same is true for claim 24.

In claim 12, it is unclear where the “second reference voltage” comes from.

In claim 14, it is not understood how “digital gm path” can accumulate the differences and generate a second gm output signal since the path is only a conducting means. The same is true for claim 20.

In claim 29, it is unclear how the capacitor can “contribute” to the generation of the control signal and how the circuitry can be “adapted to generate a current” since the circuitry and the “capacitor” on line 5 are not connected to anything.

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In claim 30, the recitation "leakage current" on line 8 is confusing because it is unclear if this is additional "leakage current" or further recitation of the previously claimed "leakage current" on line 8 of claim 29. The same is true for claim 31.

The remaining claims are dependent from the above claims and therefore also considered indefinite.

***Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3-4 and 29-30 are rejected under 35 USC 102 (e) as being anticipated by Frans et al (US2005/0035797A1, S/N=10/638,717).

With regard to claims 1, 4 and 29-30, Frans et al discloses in figure 4 a PLL circuit comprising :

- a charge pump circuit (52, 53) coupled between a phase detector (40) and a filter. The filter includes:
  - a damping capacitor (54) connected at a first node (67) to a resistor (62) to generate a first control signal to a VCO (42);
  - a matching capacitor (59); and
  - a sensing-and canceling circuitry (60-62) adapted to drive a voltage (V4) across the matching capacitor (59) to match a first reference voltage (V3) to generate a second

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current (58) applied to the damping capacitor (54) to compensate for leakage current in the damping capacitor (54).

- With regard to claim 4, the canceling circuitry (60, 62) comprises an operational amplifier (60), a first transistors (62) and a second transistor (61).

Claim 29 is rejected under 35 USC 102 (b) as being anticipated by Fiedler (US 5,659,588).

Fiedler discloses in Figure2 a PLL circuit comprising:

- a charge pump (14) coupled between a phase detector (12) and a filter (41, 42). Wherein the filter (41, 42) includes:
- a capacitor (C1) connected to generate a first control signal (33) to a VCO (16); and
- a sensing and canceling circuitry (52) for generating a current (ICANCE) to the capacitor (C1) to cancel the leakage current (ILEAKAGE).

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 5, 6, 7 and 33-34 are rejected under 35 USC 103 (a) as being unpatentable over Frans et al (US2005/0035797A1, S/N=10/638,717) in view of Fiedler (US 5,659,588) and further in view of Smith et al (US 6,016,332).

Frans et al discloses in Figure 4 a PLL circuit comprising all of the limitations of the claimed invention as stated above but does not discloses a resistor coupled between the damping

capacitor and the oscillator as recited in claims 2 and 5, the gate oxide thickness of the capacitor (54) is substantially less than about 50 Angstroms or 17 Angstroms as recited in claims 6-7 and the second current is a scaled version of the first current based on the capacitance ratio between the damping capacitor and the matching capacitor.

Fiedler suggests in Figure 2 a filter comprising a resistor (R1) coupled between the capacitor (C1) and the VCO (16) for providing a RC time constant for the filter.

Smith et al teaches in Figure 1 a loop filter (20) comprising transistors (36, 42) connected to function as capacitor for easily fabricated on an integrated circuit since conventional capacitors cannot be fitted on the IC.

It would have been obvious to a person having skill in the art at the time the invention was made to employ the resistor as suggested by Fiedler and the transistor capacitor taught by Smith et al in the circuit of Frans et al for the purpose of providing RC time constant for the filter and for easily being fabricated on an IC. Also, a skilled artisan realizes that the second current (compensating leakage current (58)) generated by the matching capacitor (59) is used to cancel the leakage current (57) generated by the damping capacitor (54), these currents are determined by the capacitances value which are selectable, and the capacitance value of the transistor capacitors are determined by the gate oxide thickness of the transistor. Since the capacitance values and the gate oxide thickness are selectable, selecting the optimum capacitance values and the optimum gate oxide thickness of the transistor a 50 Angstroms or 17 Angstroms for providing predetermined capacitance values as claimed is considered to be a matter of a design expedient for an engineer depending upon a particular application is which the modified circuit of Frans is to be used. Lacking showing any criticality, it would have been obvious to a person having skill in the art at the time the invention was made to select the capacitance values and the gate oxide thickness of the transistor capacitors of Frans as claimed for the purpose of accommodating with the requirement of the predetermined system. *In re Boesch*, 617F-2d272.205USPQ(CCPA 1980).

Claims 33-34 are rejected under 35 USC 103 (a) as being unpatentable over Fiedler (US 5,659,588) in view of Smith et al (US 6,016,332).

Fiedler discloses in Figure 2 a PLL circuit comprising all of the limitations of the claimed invention as stated above but does not disclose that the gate oxide thickness of the capacitor is less than about 50 Angstroms or 17 Angstroms in claims 33-34. Smith et al teaches in Figure 1a loop filter (20) comprising transistors (36, 42) connected to function as capacitor for easily fabricated on an integrated circuit since conventional capacitors can not be fitted on the IC

It would have been obvious to a person having skill in the art at the time the invention was made to employ the transistor capacitor as suggested by Smith et al in the circuit of Fiedler for the purpose of implemented on the IC to reduce the size. It is noted that, as well known in the art, the capacitance value of the transistor capacitor of Smith et al is determined by the gate oxide thickness of the transistor. Selecting the gate oxide thickness of the transistor a 50 Angstroms or 17 Angstroms for providing predetermined capacitance values is considered to be a matter of a design expedient for an engineer depending upon a particular application is which the modified circuit of Fiedler is to be used. Lacking showing any criticality, it would have been obvious to a person having skill in the art at the time the invention was made to select the optimum gate oxide thickness of the transistor capacitor of Fiedler as claimed for the purpose of accommodating with the requirement of the predetermined system. *In re Boesch*, 617F-2d272.205USPQ(CCPA 1980).

#### ***Allowable Subject Matter***

Claims 20-28 would be allowable if rewritten or amended to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action. The claims are allowed because the prior art of record does not show the "digital gm path" as combined in claim 20.



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Claims 8-19 and 31-32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. The claims are allowed because the prior art of record does not show the "transconductor capacitor" to generate a second control signal for the oscillator as recited in claim 8.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DINH T. LE whose telephone number is (571) 272-1745. The examiner can normally be reached on Monday-Friday (8AM-7PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, TIMOTHY CALLAHAN can be reached at (571) 272-1740.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'Dinh T. Le', with a long horizontal flourish extending to the right.

**DINH T. LE**  
**PRIMARY EXAMINER**